HOW PROGRAMS CAN MOTIVATE DEVELOPERS TO IMPLEMENT EFFECTIVE CONSTRUCTION SITE EROSION CONTROLS: A COMPARISON BETWEEN TWO SOUTHEASTERN METROPOLITAN REGIONS

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Abstract. Although sediment and erosion control laws in Georgia have been in existence for over 20 years, sediment from construction sites continues to impact surface water quality. Developers are sometimes unaware of the most effective type or design of an erosion control for a given site. Therefore, the objective of this paper is to recommend programs to help developers implement the most effective erosion controls for construction sites through a comparison of existing programs in the Atlanta and Charlotte metropolitan regions.

Both local municipalities and advocacy groups have developed programs to help developers implement the most effective erosion controls at construction sites. Most of these programs focus on educating the developer and its contractors. Recommendations for additional programs include continuing required education, the creation of a regional erosion/sedimentation authority, required monitoring, and the use of erosion control as a selling point.

INTRODUCTION

The importance of controlling erosion from construction sites is evident based on the impacts of sediment on the river environment. Sediment is one of the nation's top river pollutants. Sediment decreases the river water quality by smothering aquatic habitat, choking fish and insects, and blocking sunlight from aquatic plants. In addition, the sediment particles often adsorb harmful pollutants such as phosphorus and pesticides. These pollutants may then be ingested by aquatic life.

Although sediment and erosion control laws have been in existence for over 20 years, sediment from construction sites continues to impact surface water quality. One reason for this continued erosion is improper design or maintenance of erosion controls. Furthermore, developers are sometimes unaware of the most effective type or design of an erosion control for a given site. Therefore, the objective of this paper is to recommend programs to help developers implement the most effective erosion controls at construction sites by comparing existing programs in two developing southeastern metropolitan areas.

The two cities selected for this comparison, Atlanta, Georgia and Charlotte, North Carolina were chosen due to their similar statges of development. In addition, both cities are located in the Piedmont physiographic province so that the topography, geology, and soils of the two regions are similar.

This paper will describe the physical characteristics and erosion and sedimentation regulations related to land disturbing activities in both regions. Next, examples of current programs designed to work with developers to implement the most effective erosion controls in each region are described. Finally, based on these programs and recommendations from the groups interviewed, recommendations for additional programs are presented.

DESCRIPTION OF METROPOLITAN REGIONS

Most of the new development in the Atlanta region is currently occurring in the counties north of the city including Cobb, north Fulton, and Gwinnett Counties. In the metropolitan Charlotte region, most development is occurring in the City of Charlotte, and in Mecklenburg and Cabarrus Counties. Although the Charlotte region is smaller than the Atlanta region, their growth patterns are similar.

EROSION AND SEDIMENT CONTROL REGULATIONS

Atlanta region

The first legislation in Georgia regarding sediment was the Georgia Erosion and Sedimentation Act, passed in 1975. In

1995, additional legislation specified that runoff from land disturbing activities could not increase the in-stream turbidity more than 25 nephelometric turbidity units (NTU, 10 NTU in trout waters) above background levels.

The Georgia Erosion and Sedimentation Control Act also enables local soil and water conservation districts to review erosion control plans for new development. These erosion control plans include designs of adequate erosion prevention measures, such as silt fences, sediment ponds, grass plantings, and hay bales. The review must be completed before a developer can obtain a land disturbance permit and proceed with construction. In the Atlanta region, these districts have entered into agreements with local governments so that these local governments may review erosion control plans and issue land disturbance permits.

Charlotte Region

Chapter 4 of the North Carolina Administrative Code describes the requirements of erosion and sedimentation control plans for land disturbing activities. These plans are submitted to either the Office of Sedimentation Control Commission or to the local government administering the erosion control program. The Commission delegated erosion control programs to local governments in areas of more intensive development including the City of Charlotte, and Mecklenburg and Cabarrus Counties. These locally delegated programs have their own Soil Erosion and Sedimentation Control Ordinance that contains additional requirements for erosion control plans. Like the Atlanta region, a review of the plan must be completed before a developer can obtain a grading permit and proceed with construction (Sedimentation Control Commission, 1995).

PROGRAMS THAT HELP DEVELOPERS IMPLEMENT EFFECTIVE EROSION CONTROLS

Both local municipalities and advocacy groups have developed programs to help developers implement the most effective erosion controls at construction sites. Most of these programs focus on educating the developer and its contractors.

Atlanta Region

The City of Alpharetta Environmental Services Department conducts a free, monthly 3-hour class on the fundamentals of erosion and sedimentation control. Developers that have violated their erosion and sediment control plans must attend the class. This class includes a discussion of the Georgia soil erosion control laws, descriptions of different erosion controls, and local requirements for erosion control. The Environmental Services Department is planning to make this class a requirement for obtaining land disturbance permits in the future (West, 1998).

Gwinnett County also presents an erosion control seminar for developers. The yearly seminar covers the basics of erosion control and usually includes speakers from the Georgia Environmental Protection Division (EPD), the Georgia Soil and Water Conservation Program, and an environmental group. In order to boost attendance at these seminars, Gwinnett County distributes gift certificates redeemable at a sporting goods store. Approximately 250 people attended the last seminar (Woodall, 1998).

The Chattahoochee Riverkeeper, an advocacy group concerned with the water quality in the Chattahoochee River Basin, organized the development of an erosion and sediment control kit for developers. A certified soil erosion control expert, with input from the Georgia EPD and other erosion control experts, prepared this kit. Approximately 500 of these kits were distributed free to developers at local planning meetings.

The erosion and sediment control kit contains an executive summary, notebook of selected media coverage, and a field guide. The executive summary includes discussions of specific erosion controls for homebuilders and information regarding the protection of natural resources at construction sites. The media coverage notebook contains copies of newspaper articles outlining local soil erosion problems and successes along with advertisements for commercial erosion control products. The field guide contained in this kit provides a detailed description of the most commonly used field practices for erosion control such as sediment traps, silt fences, and buffer zones, including when to use, how to install, and how to maintain each practice. Costs of the controls are also included. These field guides have been the most popular part of these erosion control kits among developers.

Charlotte Region

Mecklenburg County and the City of Charlotte offer education for developers regarding erosion control. The City and County sponsor a $50 Erosion Control Training Workshop approximately every six months. Although this workshop is not mandatory, participation in the class, in addition to the development of at least two approved commercial erosion control plans in the past two years, qualifies the developer for one-day plan review of erosion control in the City or the County (Charlotte-Mecklenburg One Day Plan Review for Erosion Control Program Handbook, 1998). This one-day review time can reduce lag time in construction and therefore reduce costs to developers.

The Mecklenburg County Department of Environmental Protection created the Surface Water Improvement and

Management (SWIM) panel with staff to identify water quality problems in the region and recommend actions to improve water quality. In the Consensus Recommendation adopted by the panel in April 1998, the SWIM panel determined that the two worst pollutants in local streams are bacteria and sediment. Therefore the panel recommended the education of companies involved in land disturbing activities. The County would establish a licensing program to ensure basic understanding of erosion control before issuing a land disturbing permit and require continuing education credits and ongoing training. Approximate cost of this program including 1 full-time staff person would be $50,000 annually. The Mecklenburg County Engineering and Building Standards and City of Charlotte Engineering and Property Management would be responsible for implementing this program (Mecklenburg County Board of Commissioners, 1998).

The City of Charlotte is working with developers to limit erosion from construction sites that are less than one acre because an erosion control plan is not required for the development of these smaller sites. City engineers request that the developer present a sketch of the planned erosion control on-site. The engineers then informally make recommendations to the developer regarding the proposed erosion controls (Geer, 1998).

RECOMMENDATIONS FOR ADDITIONAL PROGRAMS

Based on the programs described in this paper and ideas from various regulators and water quality advocates, additional programs may be implemented to further help developers implement the most effective erosion controls. These programs include:

Require continued education

Most of the groups interviewed for this paper have had success with their current educational programs aimed at developers. However, because erosion and sedimentation continues to be a major water quality problem, additional education programs should be developed. Attendance at an erosion control seminar similar to the program implemented by the City of Alpharetta should be required for all new land disturbance permits. In addition, erosion control engineers should be required to be certified as a Professional in Erosion and Sediment Control to design an erosion control plan. Finally, a minimum number of yearly continuing education credits should be required to retain the certification. These credits could be obtained by attending erosion control educational activities.

Create a regional erosion/sedimentation authority

Because there are several municipalities involved in issuing land disturbance permits in the Atlanta and Charlotte metropolitan regions, there is no standard of design, enforcement, or punishment regarding erosion control. For example, counties and cities may require different design criteria for controls or issue citations and fines for different types of erosion control violations. Developers that work in the different counties must then keep track of these local differences. Furthermore, the developer may not implement the best controls or continually maintain the controls if he feels that he will not be severely punished. However, if a regional authority handled all regional land disturbing activities, developers would only be required to know one set of regulations. In addition, if one authority was able to strictly monitor the controls, developers would make more of an effort to ensure the proper maintenance of the controls.

Require monitoring

Many developers are not familiar with the Georgia Erosion and Sedimentation Act requirements for turbidity. However, if monitoring of runoff from erosion controls were required, developers would realize how land disturbing activities and erosion controls can impact water quality. This monitoring would therefore help developers design and maintain more effective controls.

Make erosion control a selling point

Most citizens want healthy streams in their communities. While at the same time, developers want to make money on their projects. If developers advertise how they have implemented erosion control on a site, a homebuyer may choose that development over another. For example, the Crescent Resources developer in Charlotte has had success with a similar program. A recent development included a 100-foot buffer around a lake in one of its developments, which is more stringent than North Carolina buffer requirements. Homebuyers were pleased that steps were taken to ensure the future water quality of the lake. The development has been a great economic success for the developer.

The recommendations presented in this paper are based on the research collected for this study. This research includes interviews with local municipalities and a literature review of existing regulations. There was no information available regarding the effectiveness of the existing or recommended programs. Therefore, additional study of these programs should be performed before these recommended programs are implemented.

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